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Multi-criteria evaluation for conservation and sustainable use of a mangrove fishery resource in the northeastern Brazil

Luciana Cavalcanti Maia Santos¹, Farid Dadouh-Guebas² and Marisa Dantas Bitencourt¹

¹Universidade de Sao Paulo, Brazil

²Université Libre de Bruxelles, Belgium

Mangroves are productive coastal ecosystems that form an ideal habitat for many fishery species, as the crab *Ucides cordatus*. In Brazil this crab holds socio-economic importance for artisanal fishery, but declines on its productivity have been putting this fishery at risk. To contribute to a sustainable fishery, this study determined and mapped the more suitable mangroves for the conservation and fishery of this crab in the São Francisco Estuary (northeastern Brazil). We applied a Multi-Criteria Evaluation, considering the Weighted Linear Combination and the Analytical Hierarchy Process. Ten criteria were used: five biotic of the crab population parameters, three related to land use and cover and two social. Satellite images, remote sensing techniques, (e.g. vegetation index, pan sharpening, supervised classification, distance operators) and field data were used to spatialize the criteria. The mangroves more suitable for the conservation of *U. cordatus* (9.4 km²) are those close to the river mouth, showing high density and frequency of non-commercial sized crabs, low density of commercial crabs, small crabs and low degree of use for fishery. The mangroves more suitable for the crab fishery (10.2 km²) are those located far from to river mouth and close to the fishery villages, showing high density and frequency of commercial sized crabs, low density of non-commercial crabs, big crabs, medium to high degree of use. This information can aid government agencies in delineating extractive and fishery exclusion areas, as stated by the National Management Plan for this crab, thus contributing with strategies to achieve a sustainable fishery.

santosl@usp.br, cavalcanti_luciana@yahoo.com.br

The interaction between 3D marine seismic and fisheries in a case study in Brazil

Renato de Assis Cordeiro¹, Silvio Jablonski² and Eduardo Gonçalves Serra¹

¹UFRJ, Brazil

²National Agency of Petroleum, Brazil

The oil exploration and production activity in Brazil has been growing in the sea/marine basin. One of the most efficient methods of search for oil and gas in these areas is the 3D seismic, which uses the sound as the main source of a seismic signal. The understanding of sound behavior in the sea is fundamental not only in the exploratory process, but also to understand how this anthropogenic sound will affect fish populations and fisheries. The knowledge of the seismic effects on the fisheries is important to regulate the operations to acquire seismic survey and to set mitigation and compensation procedures. The Brazilian Institute for the Environment and Renewable Natural Resources - IBAMA, in its process of the seismic activity license, obliges the entrepreneur to set catch and fishing effort information acquisition in a possible "influence area", comprehending, in some cases, a great number of landing places. In this monograph, catch and effort data series from the localities of Ilhéus, Acuípe, Pedras de Una, Canavieiras, Belmonte, Santa Cruz de Cabrália and Porto Seguro were analyzed. Data included periods prior, subsequent and within the seismic activity carried out in blocks BM-J-3 and BM-J-4 in Jequitinhonha basin. The results didn't show any influence of seismic activity on CPUE series, although, the poor quality of at least part of the data might have impaired a more rigorous evaluation. It was also evident that definition of suitable methodologies and the correct supervision and capacity building of people in charge of data collection are essential to guarantee data quality and subsequent time series analyses concerning the influence of seismic on fisheries.

renatocordeiro@poli.ufrj.br